Sawyer

Sawyer Overview

Volunteer monitoring began at Lake Sawyer in the 1980s, continuing through 2004. The data indicate this city lake (Black Diamond) is low to moderate in primary productivity (oligotrophic - mesotrophic) with very good water quality. A Lake Management Plan was completed by King County in 2000 (King County 2000).

Lake Sawyer has a popular public access boat launch. Eurasian milfoil has invaded the lake and established a growing population. Residents should keep a close eye on aquatic plants growing nearshore to catch growing patches of this, Brazilian elodea, and other noxious weeds.

Physical Parameters

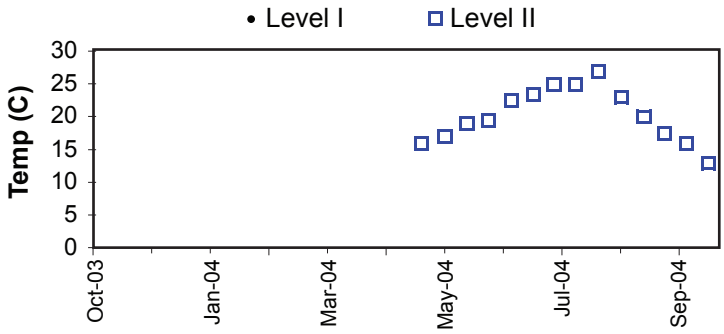
Secchi transparency ranged from 2.4 to 5.0 m from late April through October, averaging 3.9 m which placed it in the upper range for water clarity among the small lakes monitored in 2004. Water temperatures during the same period reached 27.0 degrees Celsius, making it among the warmest lakes of the group.

Records were kept of local precipitation and water levels for much of the year, showing that levels rose in fall concurrent with several large storm events and remained fairly steady through the end of June.

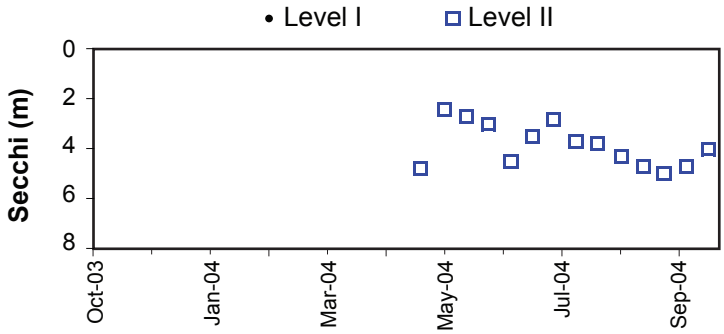
Nutrient Analysis and TSI Ratings

Total nitrogen decreased over spring and then remained relatively constant relative to total phosphorus until the last sample date. The N:P ratio ranged from 12 to 62, averaging 49 which suggested poor conditions for nuisance bluegreen growth for much of the season.

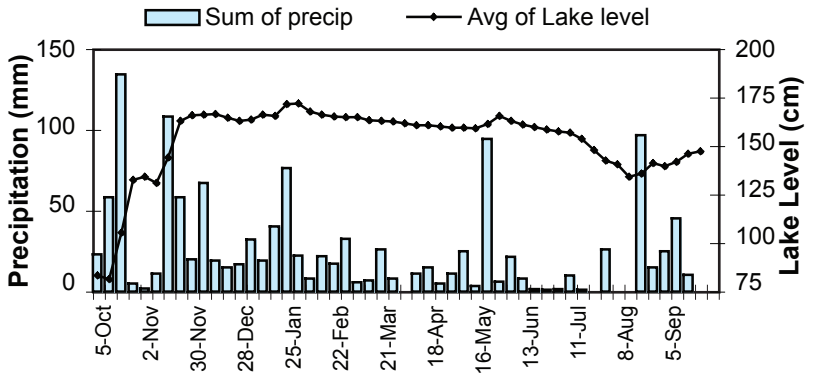
Lake Temperature



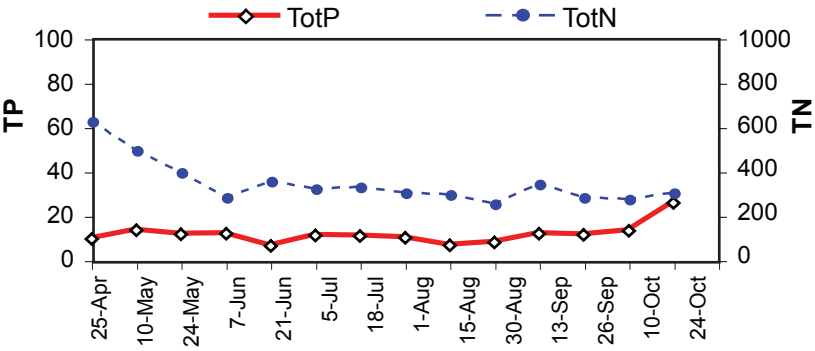
Secchi Depth



Lake Level and Precipitation



Nutrient Analysis



Profile data indicate that thermal stratification was present early in the season and persisted through the summer. Concentrations of phosphorus in the deep water increased greatly by late August, suggesting accumulation due to sediment release. Chlorophyll data indicated that algae were more abundant in the middle of the water column in late summer.

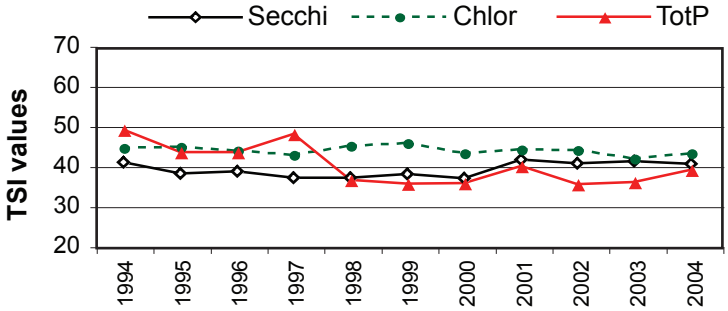
In 2004 the average TSI values were spread across the threshold between oligotrophy and mesotrophy, similar to past years but closer together in value.

Chlorophyll Concentrations and Algae

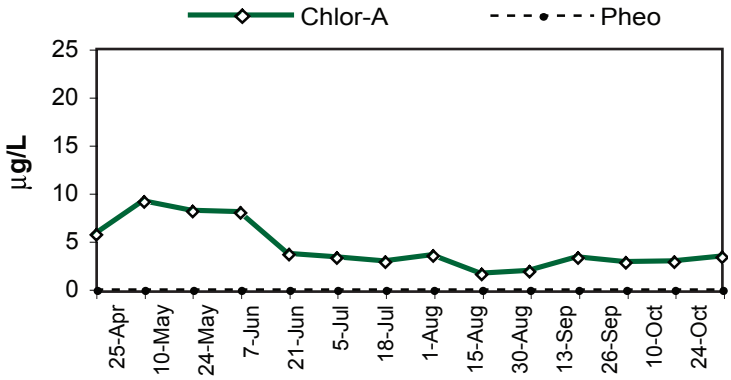
Chlorophyll concentrations were highest in the spring, decreasing to low values maintained through the rest of the sampling season. The spring algae were dominated by the diatom *Cyclotella*, with smaller amounts of several cryptophytes. Summer and autumn communities were characterized by colonial bluegreens such as *Anacystis*, *Snowella*, and *Chroococcus*.

Date	Secchi	depth-m	degC	Chlor-A	TP µg/L	TN µg/L
5/24/04	2.7	1	19.0	8.17	12.3	402
		8	8.0	7.05	12.6	653
		16.5	7.0		37.6	757
8/30/04	4.3	1	23.0	1.90	8.7	260
		8	10.0	6.30	17.0	314
		16.5	8.0		276.0	1130

TSI Ratings



Chlorophyll a Concentrations (ug/L)



Common Algae

	Group
Cyclotella sp	Bacillariophyta
Anacystis sp	Cyanobacteria
Cryptomonas sp	Cryptophyta

Sawyer

2004 Level I Data

Daily Data Summary

Week of	Sum of precip. (mm)	# of days	Avg of lake level (cm)	# of days
28-Sep-03	0.0	4	86.8	4
5-Oct-03	23.0	7	83.4	7
12-Oct-03	58.0	7	81.3	7
19-Oct-03	134.0	7	105.1	7
26-Oct-03	5.0	7	132.4	7
2-Nov-03	2.1	7	134.1	7
9-Nov-03	11.0	7	130.7	7
16-Nov-03	108.0	7	144.0	7
23-Nov-03	58.1	7	162.6	7
30-Nov-03	20.0	5	165.5	6
7-Dec-03	67.0	6	166.0	5
14-Dec-03	19.1	7	166.1	7
21-Dec-03	15.1	7	164.3	7
28-Dec-03	17.0	7	162.8	7
4-Jan-04	32.1	7	163.3	7
11-Jan-04	19.0	7	166.0	7
18-Jan-04	40.0	7	165.1	7
25-Jan-04	76.1	7	171.1	7
1-Feb-04	22.1	7	171.7	7
8-Feb-04	8.1	7	167.4	7
15-Feb-04	22.0	7	165.9	7
22-Feb-04	17.1	7	164.8	7
29-Feb-04	32.5	7	164.5	7
7-Mar-04	5.6	7	164.5	7
14-Mar-04	7.1	7	163.1	7
21-Mar-04	26.1	7	162.8	7
28-Mar-04	8.0	7	162.4	7
4-Apr-04	0.0	7	161.3	7
11-Apr-04	11.0	7	160.4	7
18-Apr-04	15.0	7	160.4	7
25-Apr-04	5.0	7	159.9	7
2-May-04	11.1	7	159.1	7
9-May-04	25.0	7	159.3	7
16-May-04	3.6	7	158.7	7
23-May-04	94.0	7	161.0	7
30-May-04	6.1	7	165.2	7
6-Jun-04	21.6	7	162.7	7
13-Jun-04	8.0	7	160.9	7
20-Jun-04	1.5	7	159.4	7
27-Jun-04	1.0	7	158.4	7
4-Jul-04	1.5	7	157.1	7
11-Jul-04	10.0	7	156.5	7
18-Jul-04	1.0	7	153.6	7
25-Jul-04	0.0	7	147.7	7
1-Aug-04	26.0	7	142.4	7
8-Aug-04	0.0	7	140.3	7
15-Aug-04	0.0	7	133.9	7
22-Aug-04	96.6	7	135.7	7
29-Aug-04	15.0	7	140.9	7
5-Sep-04	25.0	7	139.4	7
12-Sep-04	45.1	7	141.8	7
19-Sep-04	10.5	7	145.7	7
26-Sep-04	0.1	5	147.0	5
Min	0.0		81.3	
Max	134.0		171.7	
Total	1286.1			

Weekly Data Summary

Sample date	Sample time	Secchi (m)	Temp (°C)	Algae* (Shore)	Algae* (at site)	Goose Count*
Min		0.0	0.0			
Max		0.0	0.0			

* See introduction for discussion of algae assessment and goose count methods.

2004 Level II Data

Date (2004)	Temp (°C)	Secchi (m)	Chl-*a* (µg/l)	TP (µg/l)	TN (µg/l)	Algae Obsv.	N:P	Calculated TSI		
								Secc	chl-a	TP
25-Apr	16.0	4.8	5.77	10.1	629	1	62	37.4	47.8	37.5
10-May	17.0	2.4	9.13	14.0	499	1	36	47.4	52.3	42.2
24-May	19.0	2.7	8.17	12.3	402	1	33	45.7	51.2	40.4
7-Jun	19.5	3.0	8.01	12.6	290	1	23	44.1	51.0	40.7
21-Jun	22.5	4.5	3.68	7.1	362	1	51	38.3	43.4	32.4
5-Jul	23.5	3.5	3.36	11.6	327	1	28	41.9	42.5	39.5
18-Jul	25.0	2.8	2.88	11.5	337	1	29	45.1	40.9	39.4
1-Aug	25.0	3.7	3.52	10.7	309	1	29	41.1	42.9	38.3
15-Aug	27.0	3.8	1.60	7.2	303	1	42	40.7	35.2	32.6
30-Aug	23.0	4.3	1.90	8.7	260	1	30	39.0	36.9	35.4
13-Sep	20.0	4.7	3.36	12.4	350		28	37.7	42.5	40.5
26-Sep	17.5	5.0	2.80	12.0	288	1	24	36.8	40.7	40.0
10-Oct	16.0	4.7	2.88	13.7	282		21	37.7	40.9	41.9
24-Oct	13.0	4.0	3.40	26.4	309	1	12	40.0	42.6	51.4

	Temp (°C)	Secchi (m)	Chl-*a* (µg/l)	TP (µg/l)	TN (µg/l)	Algae	N:P	Calculated TSI		
								Secc	chl-a	TP
Mean	20.3	3.9	4.3	12.2	353.4	1.0	32	40.9	43.6	39.4
Median	19.8	3.9	3.4	11.8	318.0	1	29	40.4	42.5	39.8
Min	13.0	2.4	1.6	7.1	260.0	1	12	36.8	35.2	32.4
Max	27.0	5.0	9.1	26.4	629.0	1	62	47.4	52.3	51.4
Count	14	14	14	14	14	12	14	14	14	14

TSI Average = 41.3